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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Docket No: Q59549

Hyun-doo SHIN, et al.

Appln. No.: 09/823,272

Group Art Unit: 2625

Confirmation No.: 7285

Examiner: Yubin Hung

Filed: April 2, 2001

For: STATISTIC BASED VECTOR APPROXIMATION FILE: A DATA STRUCTURE FOR INDEXING IN HIGH DIMENSIONAL SPACE

REPLY BRIEF PURSUANT TO 37 C.F.R. § 41.41

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.41, Appellant respectfully submits this Reply Brief in response to the Examiner's Answer dated November 30, 2006. Entry of this Reply Brief is respectfully requested.

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STATUS OF CLAIMS

Each of pending claims 1, 3-8 and 10-13 stand finally rejected.

Each of claims 2 and 9 are canceled.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The issues on appeal are whether the following rejections are proper:

1. Rejection of claims 1, 3, 7, 12 and 13 under 35 U.S.C. 103(a) based on Wan et al. (“A New Approach to Image Retrieval with Hierarchical Color Clustering,” *IEEE Trans. on Circuits and Systems for Video Technology*, Vol. 8, No. 5, Sep. 1998, pp. 628-643), in view of Kothuri et al. (U.S. Patent No. 6,381,605).
2. Rejection of claims 4-6, 8, 10 and 11 under 35 U.S.C. 103(a) based on Wan et al. (“A New Approach to Image Retrieval with Hierarchical Color Clustering,” *IEEE Trans. on Circuits and Systems for Video Technology*, Vol. 8, No. 5, Sep. 1998, pp. 628-643) and Kothuri et al. (U.S. Patent No. 6,381,605) as applied to claims 1, 3, 7, 12, 13 above, and further in view of Weber et al. (“A Quantitative Analysis and Performance Study for Similarity-Search Methods in High-Dimensional Spaces,” *Proceedings of the 24th International Conference on Very Large Data Base, New York, August 1998*, pp. 194-205).

ARGUMENT

The Examiner continues to incorrectly maintain that, dividing data into non-uniform subsets (albeit based on the number of data points) is the same as hierarchically indexing uniform partitions of a feature vector space.

The Appellants respectfully reiterate that Kothuri's technique is based on dividing the data into subsets such that each data will fit into a leaf node. This is not the same as in the present invention where the cells are divided into a plurality of cells having a **uniform size** regardless of whether they will fit into a particular cell or sub-cell. This is followed by a determination whether the cells where a plurality of feature vector space are concentrated exist. If such cells exist the vector data space is hierarchically indexed.

Based on a variance information, Kothuri decides how the data is subdivided. On the other hand, in the present invention, the division is always into uniform sized cells. This is clearly discussed in the Appellants brief where the two techniques are distinguished with reference to Figs. 3 and 5 of Kothuri and Fig. 2 of the present Specification.

In section A.2 of the Examiner's Answer, the Examiner appears to find the fan out M to be a threshold that determines whether there is concentration. However, this equivalence completely ignores the fact that the cells are uniform in the present invention and non-uniform in Kothuri. Further, the division is performed in Kothuri based on a variance determination.

Further Kothuri does not teach uniform cells. Kothuri suggests dividing the data into subsets such that each data will fit into a leaf node. On the other hand, in the present invention,

as recited in claim 1 the cells are divided into a plurality of cells having a uniform size regardless of whether the data will fit into a particular cell or sub-cell.

The Examiner maintains that Wan teaches uniform cells. In this connection the Examiner incorrectly notes that the Appellants admits that Wan teaches uniform cells. The Appellants merely noted that it is the Examiner's position that Wan teaches uniform cells and proceeded to distinguish the present invention from the combined teachings of Kothuri and Wan.

As noted in the Appellants' brief, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. MPEP 2143.01 *citing In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Further, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *Id. citing In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

The Examiner has not shown why Kothuri's technique will work with uniform cell sizes. The Applicants maintain that Kothuri's techniques are based on dividing the cells after determining the variance. In fact Kothuri describes in considerable detail how variance across a particular dimension is determined and then the division is performed in that dimension based on the variance. A skilled artisan will know that such a technique will not work if an additional condition that the cells be uniform is imposed on Kothuri.

As noted by the Appellants, if Wan is modified to have the non-uniform cells as in Kothuri, it will be unsatisfactory for its intended purpose. In fact, the last paragraph of page 631 clearly discusses why Wan prefers uniform sizes. Likewise, Kothuri can not be modified to have uniform cell sizes because the rest of the steps in Kothuri are based on the assumption that the division is determined based on determination of a median and variance. Kothuri determines if the data items fit into one node. If they do not fit, the variance in each dimension is determined. Then a dimension or attribute hierarchy having a greatest variance is selected and the data items sorted in that dimension. The data is divided into subsets such that each data will fit into a leaf node. If the cells are uniform, then this technique is not believed to produce its intended result.

In making the assertions, the Examiner generally notes that both uniform quantization of Wan and hierarchical indexing of Kothuri. Further, the Examiner contends that Wan suggests both uniform and nonuniform quantization (p.13 of the Reply Brief). However, there is no suggestion for using uniform cell size in Kothuri. A skilled artisan would not have found it obvious to practice the invention recited in claim 1 from the combined teachings of Wan and Kothuri.

The USPTO is held to a rigorous standard when trying to show that an invention would have been obvious in view of the combination of two or more references. See, *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002), *citing*, e.g., *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) (“Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art

references.”). *In re Lee*, the Federal Circuit went on to emphasize that the “need for specificity pervades this authority.” *In re Lee* at 1433 (emphasis added) (citing *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (“particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed”).

However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. *See id.* Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. *Id.*, citing, *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. *In re Kotzab*, 99-1231 (CAFC June 2000, citing *Dembiczak*, 175 F.3d at 999, 50 USPQ2d at 1617.

The court in *Kotzab* further accentuates that close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one “to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.” *Id.* quoting *W. L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983).

The Federal Circuit appears to be clearly talking about the kind of situation as in the present case. The Applicants respectfully submit that the pending grounds of rejection do not

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satisfy the Federal Circuit's rigorous standard for demonstrating that the claimed invention would have been obvious in view of the cited references.

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CONCLUSION

For the above reasons as well as the reasons set forth in Appeal Brief, Appellant respectfully requests that the Board reverse the Examiner's rejections of all claims on Appeal. An early and favorable decision on the merits of this Appeal is respectfully requested.

Respectfully submitted,

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